

on the Floss," and so cannot identify the particular edition which produced such a wretched result, but we doubt not it was one of the ordinary small text-books with which youth were well acquainted, in shape at least, at the time referred to. And this makes us allude to the portentous dimensions of the book before us, which consists of some 370 large octavo pages. The book is not for schoolboys, but is intended for students of larger growth. It commences, as does also "The Elements of Plane Geometry" (brought out by the Association for the Improvement of Geometrical Teaching), with a preliminary chapter on Logic, which gives sufficient introduction to a subject in which "the mind first finds logic a practical instrument of great power."

We turn aside for a moment to state a *raison d'être* for the volume before us. "In America the geometries most in vogue at present are vitiated by the immediate assumption and misuse of that subtle term 'direction'; and teachers who know something of the non-Euclidian, or even the modern synthetic geometries, are seeing the evils of this superficial 'directional' method. Moreover, the attempt, in these books, to take away by definition from the familiar word 'distance' its abstract character and connection with length-units, only confuses the ordinary student. A reference to the article *Measurement*, in the 'Encyclop. Britannica' will show that around the word 'distance' centers the most abstruse advance in pure science and philosophy. An elementary geometry has no need of the words 'direction' and 'distance.' The present work, composed with special reference to use in teaching, yet strives to present the elements of geometry in a way so absolutely logical and compact that they may be ready as rock-foundation for more advanced study."

This lengthy extract puts our readers in possession of Mr. Halsted's views: the result of his efforts is an edition which will, we think, repay perusal.

Now, in reply to old Tulliver's query, "Wat's Euclid?" it was replied, "It's definitions, and axioms, and triangles, and things. It's a book I have got to learn in—there's no sense in it." (Such is the view of some boys of the present day, as we discovered in looking over answers to a recent examination paper.)

Mr. Halsted defines a straight line thus:—It is a line which pierces space evenly, so that a piece of space from along one side of it will fit any side of any other portion. In his definition of an angle (*AOB*) one of the angles is said to be the *explement* of the other; he uses the term "straight angle," calls a terminated line (as in his "Mensuration") a *sect*, and "the whole angle which a sect must turn through, about one of its end points, to take it all around into its first position, or, in one plane, the whole amount of angle round a point, is called a *perigon*." Other definitions do not call for notice, except that in the definition of a circle he has, by an oversight, omitted to state that the sect must revolve in a plane.

The First Book is divided into eight chapters, and embraces the matter of Euclid's First Book, with several other important propositions: the order is not that of Simson's text, but propositions are grouped under problems, inequalities, parallels, triangles, and polygons. This last head is broken up into the divisions, general properties (congruence), parallelograms, equivalence, and axial and central symmetry.

In Book II. the commutative law (for addition and multiplication), the associative law, and the distributive law are established, and the propositions proved symbolically. Books III., IV., V., and VI. correspond to Euclid's divisions, but the selection of propositions and their arrangement and treatment agree with results we have seen nearer home.

But we hasten to a close, remarking that the remaining books treat of planes and lines (VII.); tri-dimensional spherics (VIII.); two-dimensional spherics (IX.); polyhedrons (X.); mensuration or metrical geometry (XI.) in five chapters, length, area, ratio of a circle to its diameter, measurement of surfaces, space-angles, and the measurement of volumes. The work closes with short paragraphs on direction, principle of duality, linkage, and cross-ratio.

There are some 234 exercises grouped together at the end, and also interspersed throughout the text.

There are a few typographical errors and a few slips in statement, and very many novel terms, *i.e.* to persons who have not read the "Mensuration" referred to above. We understand that the book is about to be published in this country, when geometers will be easily able to procure a copy for an examination, which will not be unattended, we believe, with profit.

The figures are in the main carefully drawn, though some few require correction.

OUR BOOK SHELF

The Zoological Record for 1884. Edited by Prof. F. Jeffrey Bell, M.A. (London: John Van Voorst, 1885.)

WE have to congratulate the *Zoological Record* Association on having brought out this the twenty-first volume of the *Record* within the year. The publication of the *Zoological Record*, begun in 1865, was continued from 1871 by this Association, which well deserves every encouragement that the biologist can give to it. It would be a deep disgrace to our British School of Natural History if so valuable a work should be allowed to come to an end after having well and bravely struggled for existence for one-and-twenty years. At present the Association numbers only fifty-three members and seventy-one subscribers, in addition to which several of our public libraries no doubt take their copies from the publishers; but to make the Association a self-supporting one, it should have a couple of hundred new subscribers, and such a number ought to be had from among the numerous students of zoology in this country. A vigorous effort now made might mark this year in the history of the *Zoological Record* as one of financial success.

While writing thus of the present, our thoughts also wander to the past. Although none of the original writers for the *Record* have gone to their long account, yet with the present volume, the last of them, Prof. E. von Martens, ceases from his *Record* labours, and his place is to be taken by four very excellent recruits,—Prof. Herdman, Messrs. W. E. Hoyle, G. R. Vines, and G. H. Fowler. The only one of the Recorders who kept in the race for the whole of the twenty-one years—Prof. von Martens—had all through the great group of the Mollusca to record, and then, on the dropping out of the ranks of other Recorders, he took the Mollusca and Crustacea. It is not possible to part with such a contributor without publicly recording the great debt that all interested in zoology owe to him for his labours.

One other contributor, also of long standing, now parts company from his comrades. On Mr. Kirby had fallen the parts of Dallas and Rye. No less than Prof. von Martens he deserves our thanks. His part we are

delighted to know will be for the future filled by Dr. Sharp.

The editor's preface opens with a few feeling words relating to the death of the late editor, E. C. Rye; he is also obliged to record a broken promise, which thus recalls to mind an almost similar one recorded in vol. i., but with this difference—that for vol. xxi. though at the last hour a Recorder was found to supply the not forthcoming record, and has done so in a manner that, novice though he may be, shows the master's hand, for Mr. P. L. Sclater's record of the Mammalia forms not alone a scientific record, but its arrangement and style is so good and the summary of work on the general subject is so excellent as to mark it out for special notice.

Mr. Bowdler Sharpe, owing to his visit to Simla, left the record of the birds to Mr. A. H. Evans.

Mr. Gibson-Carmichael, in his record of Arachnids for 1883 and 1884, apologises for not recording a list of the new species described in the papers quoted owing "to his not feeling competent to judge of the value of new species." Here we may be allowed to utter a word of caution. A record should not of necessity be a criticism, and we would have preferred to have seen a statement of all the new species and their habitats than merely the titles of papers. For a zoological inquirer the habitat is often an assistance, and we notice that the same Recorder has not in the case of the Myriapoda been as particular in quoting these as we could have wished. Prof. Haddon has recorded the Infusoria. Certain very desirable changes in the sequence of some of the groups have been made by Prof. Jeffrey Bell, who acknowledges the receipt of money grants in aid of the publication from the Government Grant Committee of the Royal Society and the British Association, and whom we wish every success in his arduous and difficult task as editor of our British Record of Zoological Science.

Elemente der Lithologie. Von Dr. Ernst Kalkowsky. (Heidelberg: Carl Winter, 1886.)

THIS is an attempt, and a very successful one, to present to the student an elementary treatise, which shall be at once brief but well up to date; a difficult task in the case of a subject of which our stock of knowledge is being continually increased by results scattered through, or buried in, countless separate memoirs. The work is without figures, and is compressed into 316 pages, the first 57 of which are given to a general and introductory discussion of the characters of rocks and the methods of investigation. The reader's sound knowledge of the principles of chemistry, mineralogy, and physical optics is assumed by the author. The classification used in the larger treatises is generally adhered to. The arrangement of the information relative to each rock-family is very neat and compact: first is given a list of chemical analyses, and next a description of the macroscopical and microscopical characters of the component minerals; then follow accounts of the modes of occurrence, alteration, and genesis; and finally a short description of the varieties. The work is altogether satisfactory.

Notions Générales sur l'Éclairage Électrique. Par Henry Vivarez. (Paris: J. Michelet, 1886.)

THIS is a second edition of one of those readable and well-illustrated brochures that the French know so well how to write, and that have such a ready sale in their country, but which fail to secure even a publisher in this. The author is known in this country principally as a contributor to *Engineering*. His name has not been associated with any electric light enterprise, but he clearly understands that which he writes about. There is not much in the book that is new, indeed there is much that is obsolete, but what there is is clear and comprehensive. That which is French has naturally a preference over

that which comes from "barbarians." The chapter on meters and photometers is excellent. The following table is useful:—

One carcel	=	8.3	English	standard	candles.
	=	7.5	German	"	"
	=	6.5	Munich	"	"
	=	105	litres	per	hour of gas

The work is not scientific. It is popular, readable, and useful.

Rome in Winter and the Tuscan Hills in Summer; a Contribution to the Climate of Italy. By David Young, M.D. (London: Lewis, 1885.)

THIS little volume must prove of practical value to a considerable class of people, that class which every year furnishes a large contingent of visitors to Italy and winter residents in Rome. Dr. Young has himself long resided in Italy, and has had ample opportunity of observing its climatal and sanitary conditions. He shows in his instructive book that Rome has got an undeservedly bad name for its climate, and the object of the volume is to show exactly what that climate is, under such heads as—the climate of Rome and its effects upon health and disease; the unhealthiness of Rome; Roman fever and malaria; water-supply of Rome; how to live in Rome; class of invalids likely to derive benefit from a residence in Rome, and so on.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Barometric Pressure in the Tropics

THE American Eclipse Expedition to the Caroline Islands in May 1883 also made exceedingly interesting meteorological observations, of which the most important are those on the pressure of the air, as they elucidate some points in the daily period of this phenomenon (*Memoirs* of the National Academy of Sciences, vol. ii.). As this is very regular in the tropics, any difference in it points to exceedingly potent influences, and it is easy to surmise that, in the daytime, none, except a cyclone, can be more potent than an eclipse, as no other can shade the whole extent of the atmosphere. The result was an accelerated diminution of pressure from 10.15 to 11.30 a.m. (totality 11.32 to 11.37 a.m.), then a rise to about noon—i.e. at a time when there is generally a great fall—and later again an accelerated fall. The explanation is probably the following:—The accelerated fall at the beginning is caused by the diminished temperature and elasticity of the air. Then, as the height of equal pressure diminished in the shaded area, air began to flow in from the vicinity, causing a rise of pressure, and the subsequent rapid fall was a return to the normal condition.

The next total eclipse is to be on August 29 next, being visible in the morning on the Isthmus of Panama, the Leeward Islands, then Tobago, Grenada, the Grenadine Islands, and Barbados, and in the afternoon in South Africa from Benguela to Mozambique and the southern part of Madagascar. It would accordingly be important to have half-hourly barometrical observations (self-recording barometers or aneroids would be better still) at many points both of America and the adjacent islands and of Africa. We should expect to see the morning rise of pressure interrupted on the Antilles Islands (totality 7.23 a.m. at Barbados), and the afternoon fall of pressure also interrupted in Africa (totality 3.10 p.m. at Benguela).

The varying cloudiness in America and the Antilles (as the rainy season there has not the steadiness of the Indian monsoon and does not exclude clear days) would add a feature of even greater interest, as the influence of the eclipse on the daily period of pressure in clear and cloudy days could be compared. In South Africa, except the coast, where fogs are frequent at